



# Australian Bureau of Statistics

## 1350.0 - Australian Economic Indicators, Mar 2003

ARCHIVED ISSUE Released at 11:30 AM (CANBERRA TIME) 28/02/2003

### Feature Article - Updating the Experimental Composite Leading Indicator of the Australian Business Cycle: Mar Qtr 2003

#### BACKGROUND

The ABS Experimental Composite Leading Indicator (XCLI) is a single time series designed to provide early signals of turning points in the Australian business cycle. It does not predict the level of GDP or signal recessions or recoveries.

The XCLI has been developed to supplement rather than to compete with existing forms of economic analysis and forecasting. It is published each quarter in Australian Economic Indicators (in the March, June, September and December issues).

#### RECENT PERFORMANCE

Past performance of the XCLI shows it led turning points in the business cycle by between one and six quarters, with the average being around two quarters. However the XCLI has not been performing well recently, with the lead time between movements in the XCLI, and the GDP business cycle steadily declining (See page for more details).

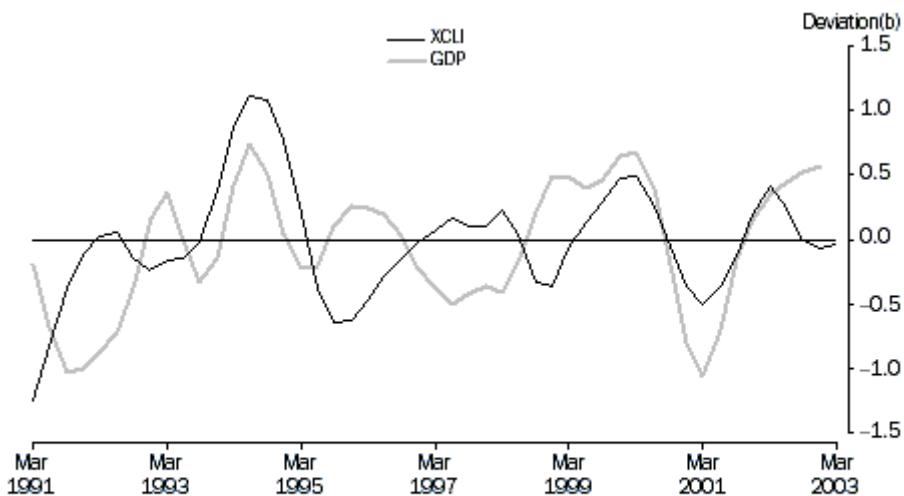
#### MOST RECENT MOVEMENTS

In the March quarter 2003, the XCLI rose following three quarters of decline (up 0.03 to -0.04). The XCLI showed a provisional turning point at December quarter 2002. Based on historical performance a trough in the GDP business cycle may be expected to emerge several quarters later. However the XCLI showed a peak in the March quarter 2002 which has yet to show in the GDP business cycle.

Although it has known problems, the XCLI is signalling a forthcoming downturn in the GDP business cycle. Only two of eight component indicators are making a positive contribution. In the March quarter 2002, the series that gave the largest positive contribution was the Real Interest Rate series (0.10) while the largest negative contribution to the change in the XCLI came from Business Expectations (-0.08).

#### 1. EXPERIMENTAL COMPOSITE LEADING INDICATOR (XCLI) AND ITS TARGET, THE BUSINESS CYCLE IN GDP

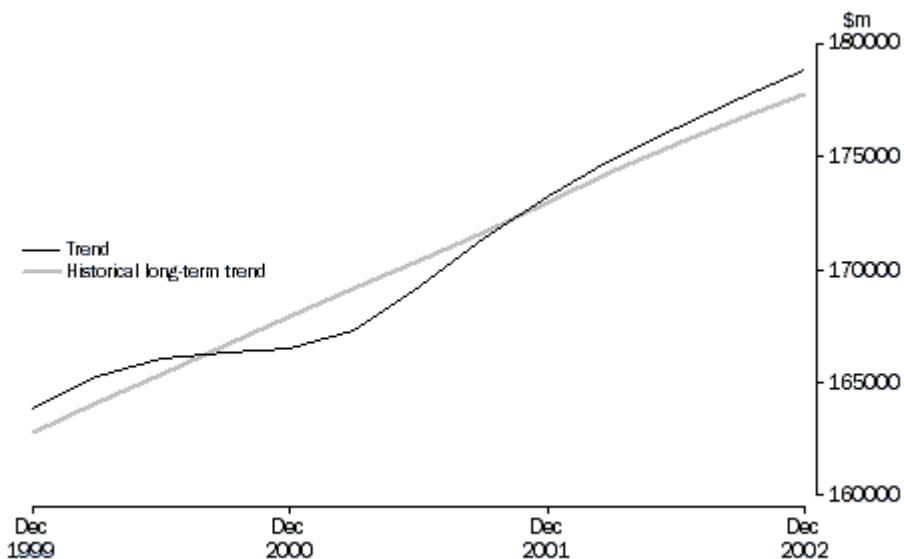
Chain volume measure (reference year 2000-2001)(a)



(a) In the December quarter 2002, the historical long-term trend growth rate of GDP is 0.63% and the trend growth rate is 0.67%.

(b) Deviation is the unit of measure for the GDP series and it refers to the deviation of trend from its historical long-term trend. The XCLI series has no official unit of measure, ie it is dimensionless. (see Endnote).

## 2. GDP, Chain volume measure (reference year 2000-2001)



Source: ABS (Cat. no. 5206.0), Quarterly data

**TABLE 1 XCLI AND GDP CHAIN VOLUME MEASURE (REFERENCE YEAR 2000-2001)**

	Dec 2001	Mar 2002	Jun 2002	Sep 2002	Dec 2002	Mar 2003
LEVEL						
XCLI	0.2	0.41	0.24	-0.01	-0.07	-0.04
GDP Trend (\$m)	173,284	174,912	176,320	177,647	178,846	na
GDP Long-term trend (\$m)	173,017	174,296	175,547	176,722	177,831	na
GDP Business cycle	0.15	0.35	0.44	0.52	0.57	na
MOVEMENT FROM PREVIOUS QUARTER						
XCLI (change)	0.33	0.21	-0.17	-0.26	-0.06	0.03
GDP Trend (% change)	1.08	0.94	0.8	0.75	0.67	na
GDP Long-term trend (% change)	0.75	0.74	0.72	0.67	0.63	na
GDP Business cycle (change)	0.33	0.2	0.09	0.08	0.05	na

**TABLE 2 CONTRIBUTIONS TO QUARTERLY CHANGES IN THE XCLI**

	Dec 2001	Mar 2002	Jun 2002	Sep 2002	Dec 2002	Mar 2003
Trade factor	0.04	0.09	0.03	-0.03	0.02	-0.02
United States GDP	0.01	0.07	0.08	0.05	0.03	0.01
Housing Finance Commitments	-0.01	0.05	-0.03	-0.01	-0.01	-0.01
Job Vacancies	-0.01	0.06	0.08	0.08	0.08	0.09
S&P/ASX 200 Industrials index	0.01	0.05	-0.08	-0.12	-0.06	-0.07
Real interest rate (inverse lagged four quarters)	0.17	-0.14	-0.36	-0.27	-0.08	0.10
Production expectations (lagged one quarter)	0.09	0.11	0.07	0.02	0.01	0.00
Business expectations (lagged one quarter)	0.03	0.02	0.03	0.02	-0.05	-0.08
Total XCLI, change from previous quarter	0.33	0.21	-0.17	-0.26	-0.06	0.03

The growth in GDP trend slowed continually from the December quarter 1999 (when it grew by 1.1%) to the December quarter 2000 (0.1%). This was followed by GDP growth for three consecutive quarters at an increasing rate, reaching growth of 1.3% in the September quarter 2001. Since then the quarterly growth rate has slowed continually, with growth of 0.7% in the December quarter 2002. The growth of the historical long-term trend was 0.6% in the December quarter 2002. This rate of growth has been slowing since the peak of 1.2% in December quarter 1997.

### **THE REFERENCE SERIES, GDP**

The reference or target series for the XCLI is the GDP business cycle in Australia. The business cycle of a series is defined as the deviation between the trend and the historical long-term trend in the series. Graph 1 shows the business cycles in GDP and the XCLI. Graph 2 shows the level of trend GDP compared with its historical long-term trend. When the trend is above the historical long term trend the GDP business cycle shown in Graph 1 is positive.

### **TURNING POINTS THE XCLI HAS HAD TROUBLE PREDICTING**

In the December quarter 1995, there was a peak in the business cycle which the XCLI failed to predict. This peak was largely attributable to the effects of a good farm season. The current drought is expected to have the opposite effect by depressing GDP growth. The XCLI does not contain an indicator which leads first order farm product effects. In recognition of this, Graph 3 presents an alternative target series, namely, the business cycle of non-farm GDP, chain volume measure.

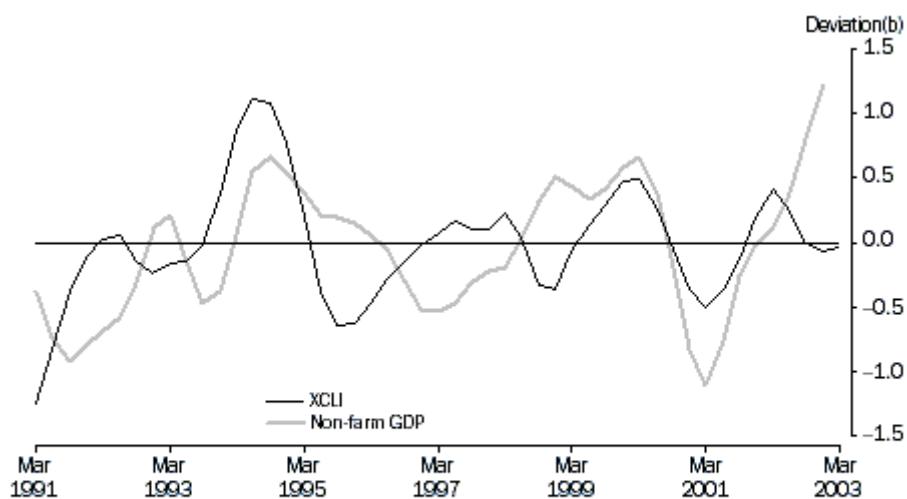
The XCLI showed a provisional trough in the December quarter 2002. Based on historical performance, the non-farm GDP business cycle may have been expected to trough two quarters later. However, the non-farm GDP business cycle has still not peaked, which suggests that a subsequent trough may be some quarters away.

The XCLI has been experiencing a decline in the lead time of predicting turning points in the GDP business cycle. The past four turning points in the business cycle have been predicted by the XCLI but the lead time has been decreasing.

### 3. EXPERIMENTAL COMPOSITE LEADING INDICATOR (XCLI) AND, THE BUSINESS CYCLE

#### IN NON-FARM GDP

Chain volume measure (reference year 2000-2001)(a)



(a) In the December quarter 2002, the historical long-term trend growth rate of non-farm GDP is 0.67% while the trend growth rate is 1.1%.

(b) Deviation is the unit of measure for the GDP series and it refers to the deviation of trend from its historical long-term trend. The XCLI series has no official unit of measure, ie it is dimensionless (see End note).

## ANALYSIS OF COMPONENT INDICATORS

The XCLI summarises the business cycles present in a selection of economic indicators which had typically shown turning points ahead of the business cycle in GDP from the early 1970s to the early 1990s. Because the evolution of each expansion and contraction in activity presents a unique combination of features, none of the individual component indicators has had an unvarying or perfectly stable leading relationship with GDP. However, when combined to form the XCLI their performance as a group is more stable.

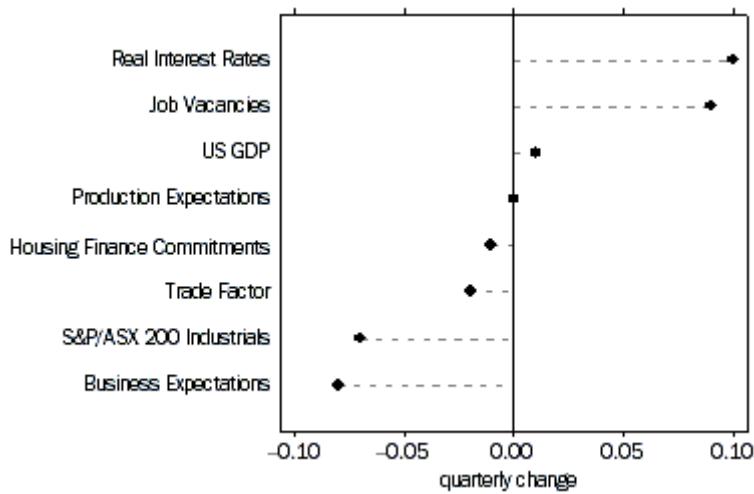
In the March quarter 2003, two of the eight components made positive contributions to the quarterly change in the XCLI, three made negative contributions and three made negligible contributions (Table 2 and Graph 4). This has caused the XCLI to decline from the previous quarter. Graphs 5 to 12 show each component's trend and historical long-term trend.

**Positive contributions.** The components making significant positive contributions to the quarterly change in the March quarter 2002 XCLI were real interest rates (0.10, Graph 10) and job vacancies (0.09, Graph 8).

**Negative contributions.** The components making negative contributions to the quarterly change in the March quarter 2003 XCLI were business expectations (-0.08, Graph 12), S&P/ASX 200 Industrials index (-0.07, Graph 9) and trade factor (-0.02, Graph 5).

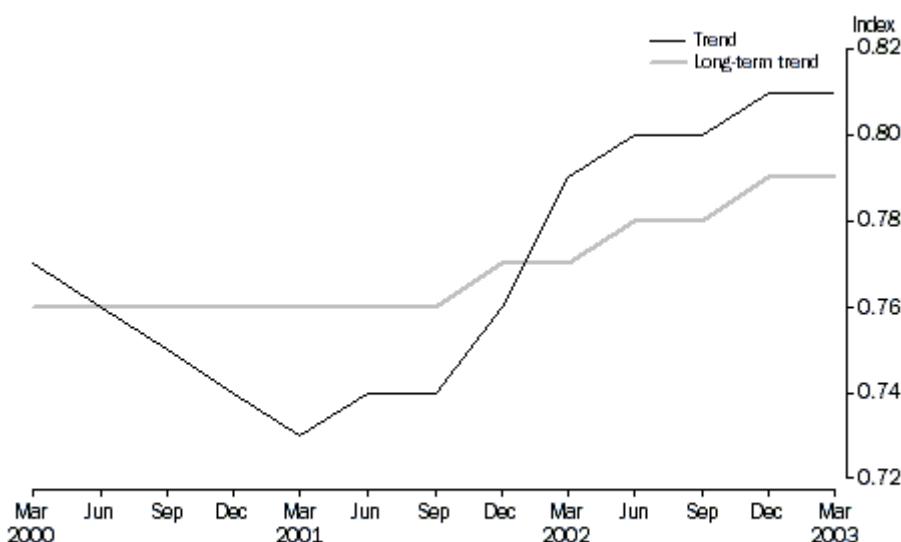
**Negligible contributions.** The components making negligible contributions to the quarterly change in the March quarter 2003 XCLI were US GDP (0.01, Graph 6), production expectations (0.00, Graph 11) and housing finance commitments (-0.01, Graph 7).

## 4. CONTRIBUTIONS TO QUARTERLY CHANGES IN THE XCLI



## Trade Factor

### 5. TRADE FACTOR



Source: ABS (Cat. no. 6411.0) and RBA Bulletin.

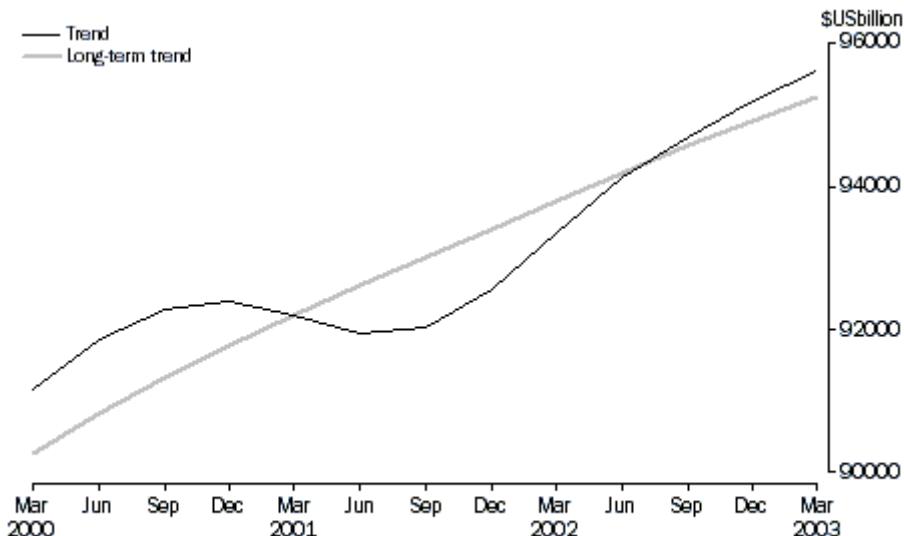
The trade factor is defined as the ratio between commodity prices in terms of Special Drawing Rights and the price index for imported materials used by Australian producers. This ratio gives an early indication of changes in the terms of trade. The trend of the trade factor rose in the March quarter 2002, which is the eighth consecutive quarter of growth. The long-term trend rose by a little more in the March quarter 2003 and as a result the trade factor component made a negative contribution (-0.02) to the change in the XCLI.

## United States GDP

The US GDP component made a negligible contribution (0.01) to the change in the XCLI in the March quarter 2003 as the trend and the long term trend are moving very similarly. This is the sixth quarter of positive or negligible contributions. The trend of the United States GDP grew in the March quarter for the seventh consecutive quarter. The rate of growth of the long-term trend has decelerated since the March quarter 1998. The trend of the US GDP rose above its long-

term trend in the June quarter 2002 after falling below it in the March quarter 2001.

## 6. UNITED STATES GDP, Chain volume measure (Reference year 1996)



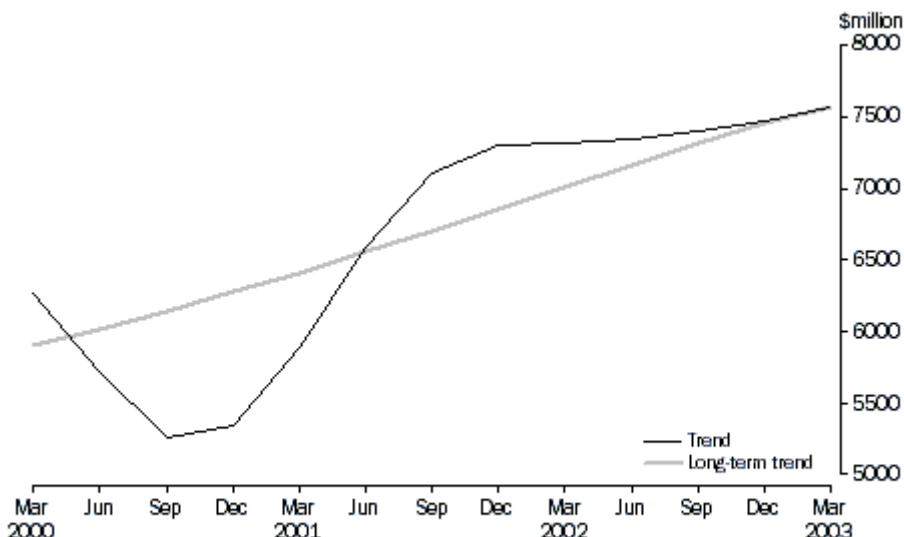
Source: US Bureau of Economic Analysis.

## Secured housing finance commitments

The trend of the secured housing finance commitments rose slightly in the March quarter 2003. The historical long-term trend for secured housing finance commitments also continued to rise.

The secured housing finance commitments component contributed negligibly (-0.01) to the change in the XCLI in the March quarter 2003. This is the sixth quarter of negative or negligible contributions to the CLI.

## 7. SECURED HOUSING FINANCE COMMITMENTS



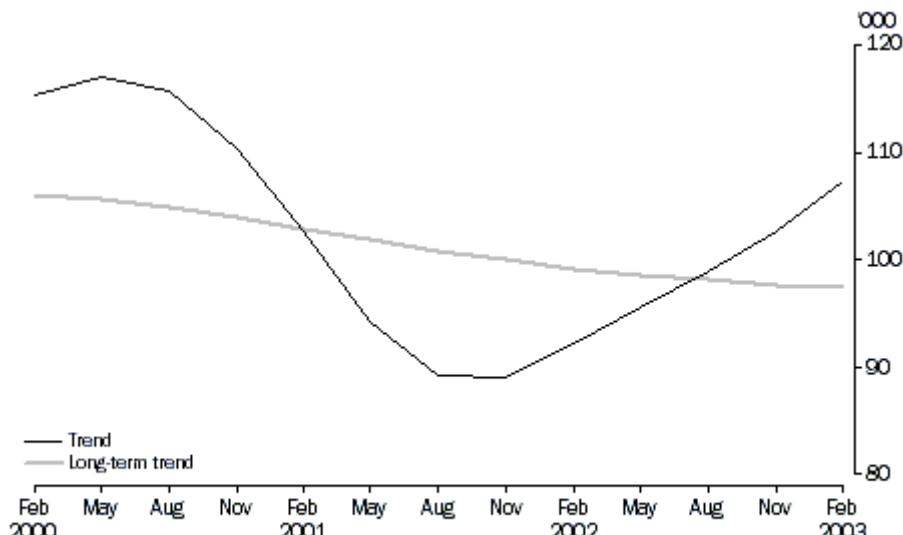
Source: ABS (Cat. no. 5671.0).

## Job Vacancies

**Note:** the job vacancies series are referenced to the middle month of a quarter.

The job vacancies trend rose in February 2003 (4.6%). This is the fifth quarterly rise in this series following six quarters of decline. The long-term trend has been falling for twelve quarters. In February 2003 it fell by -0.3%, following falls in November 2002 (-0.7%) and in August 2002 (-0.3%). The combination of growth in trend and fall in the long-term trend vacancies made a positive contribution (0.9) to the change in the XCLI in the March quarter 2003. This is the fifth quarter of positive contributions to the XCLI.

## 8. JOB VACANCIES



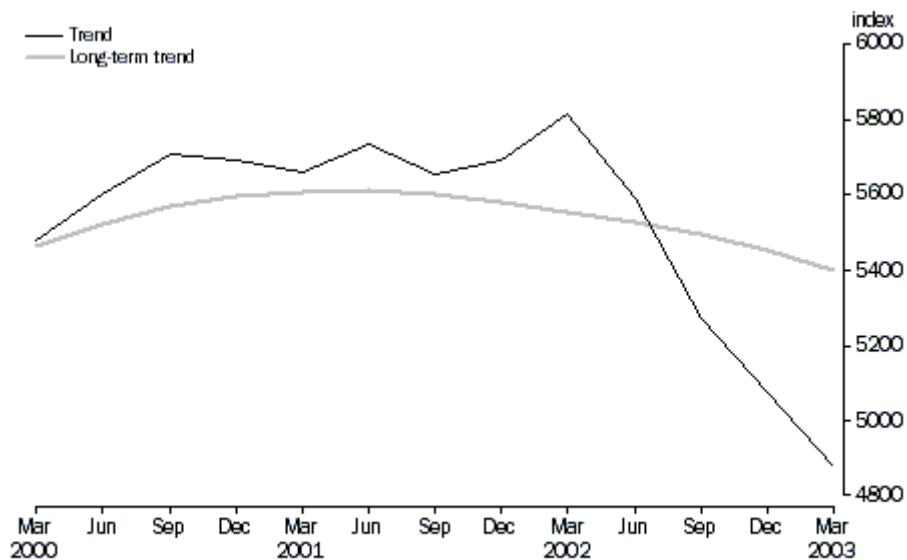
Source: ABS (Cat. no. 6354.0).

## S&P/ASX 200 Industrials index

In the March quarter 2003, the trend of the S&P/ASX 200 Industrials Index fell (-3.8%). This is the fourth quarter of falls. The long-term trend fell (-0.9%). The growth rate of the long-term trend began to slow in June quarter 1997 and the index itself began to fall in September 2001.

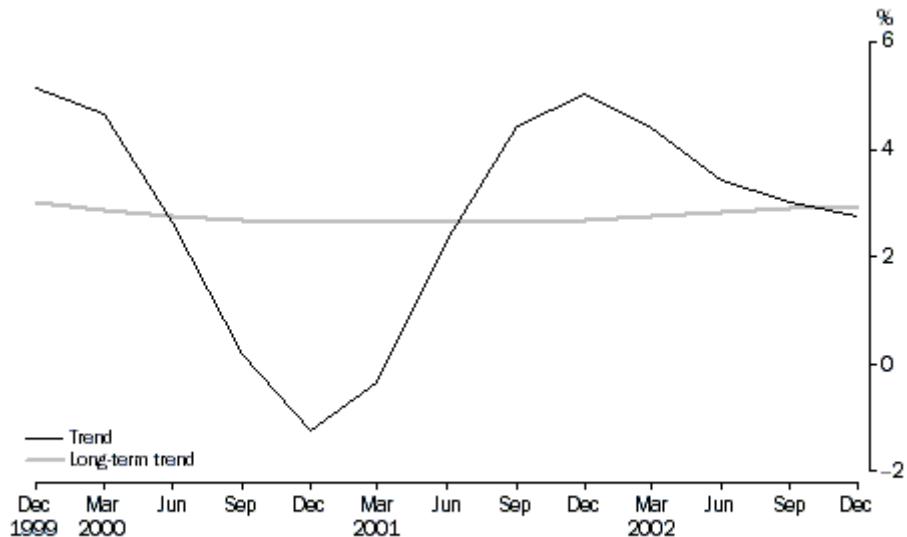
As the trend series is declining more rapidly than the long-term trend, the S&P/ASX 200 Industrials Index made a negative contribution (-0.07) to the change in the XCLI in the March quarter 2003. This is the fourth quarter of negative contributions to the XCLI.

## 9. S&P/ASX 200 INDUSTRIALS INDEX



## Real Interest Rate

### 10. REAL INTEREST RATE



**Note:** The real interest rate is defined as the difference between nominal interest rates and the change in the domestic final demand chain price index.

The XCLI uses the inverse of the business cycle in the real interest rate, lagged four quarters. Therefore, it is the March quarter 2002 movement of the real interest rate that contributes to the March quarter 2003 movement in the XCLI. The real interest rate component made a positive contribution (0.10) to the change in the XCLI in the March quarter 2003.

The trend of the real interest rate fell in the December quarter 2002. This movement follows four quarters of falls and four quarters of rises in the series. The long-term trend rose at a slowing rate following five quarters of rises.

It is the relative movements in the trend and long-term trend series in the March quarter 2002

that contribute to the March 2003 XCLI. The movements in the June quarter 2002 mean real interest rate component should make a positive contribution to the change in the June quarter 2003 XCLI.

## Production and business expectations

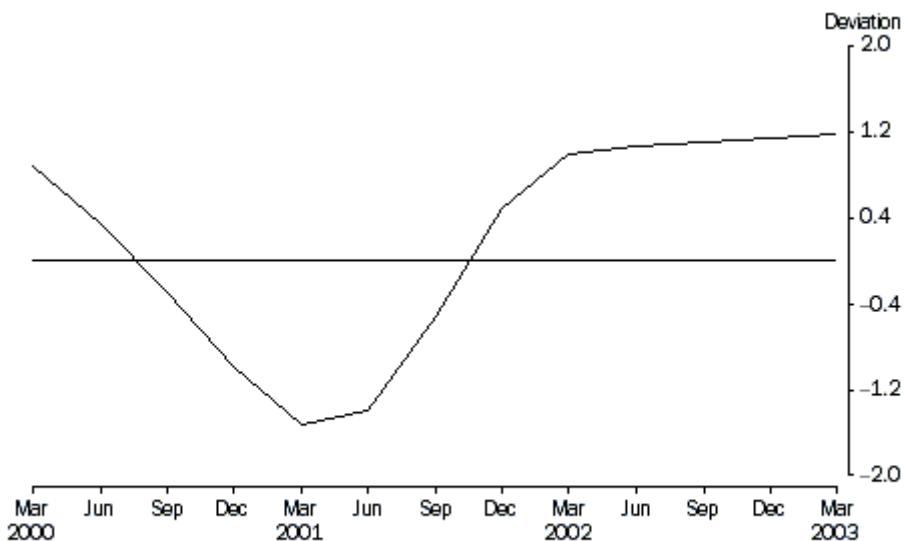
**Note:** These components are lagged one quarter in the compilation of the XCLI. Like other XCLI components, the production expectations and business expectations series have been smoothed and standardised to display cyclical behaviour. However, these series are not considered to exhibit long-term trend growth.

In the March quarter 2003, the trend of production expectations showed an increase. According to the Survey of Industrial Trends (produced by ACCI and Westpac Banking Corporation), production expectations in original terms were up in December quarter 2002. Because this component is lagged one quarter, it was the small positive movement in the December quarter 2002 that made a negligible contribution in the change in the XCLI in the March quarter 2003 (0.00). This component is expected to make a positive contribution for the June quarter 2003.

In the March quarter 2003, the trend of business expectations fell for the fourth consecutive quarter following rises in the previous six quarters. According to the March quarter 2003 Survey of Industrial Trends business expectations have been strongly affected by rising concerns about global developments, and slumped further from the previous quarter's subdued levels. Because this component is lagged, it was the decrease in business expectations in the December quarter 2002 that made a negative contribution to the change in the XCLI in the March quarter 2003 (-0.08). This component is expected to again make a negative contribution for the June quarter 2003.

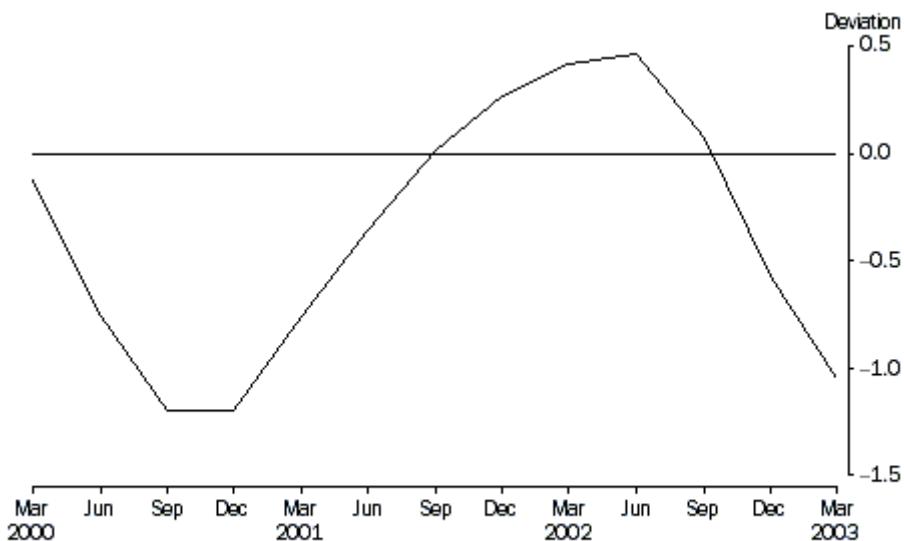
**Note:** The source of these expectations series is the Australian Chamber of Commerce and Industry, and Westpac Banking Corporation, Survey of Industrial Trends.

### 11. PRODUCTION EXPECTATIONS, Trend



Source: ACCI and Westpac Banking Corporation, 'Survey of Industrial Trends'.

### 12. BUSINESS EXPECTATIONS, Trend



Source: ACCI and Westpac Banking Corporation, 'Survey of Industrial Trends'.

## LONGER TIME SERIES AND FURTHER DETAILS

Details of the compilation of the XCLI index can be found in **An Experimental Composite Leading Indicator of Australian Economic Activity**, cat. no. 1347.0, released in June 1993, and in the feature articles published in **Australian Economic Indicators**, cat. no. 1350.0, in August and October 1992 and May 1993.

Longer time series of the data presented in this XCLI article are available on AUSSSTATS. For further information about these statistics please contact Jo Jackson on Canberra (02) 6252 6114.

## ENDNOTE

The unit of measurement varies between XCLI components. For example, the real interest rate is measured as a percentage, job vacancies as a number, United States GDP in dollar terms and the trade factor is measured in index number form. Each component is therefore standardised to make its contribution to the XCLI comparable.

The standardisation procedure gives each XCLI component an average value of 1. The variation of each component about its average is also standardised, so that the average deviation also equals 1. Chain volume GDP (the reference series) is also standardised in the same way.

Graphs 1 and 3 use the standardised forms of the XCLI, GDP and non-farm GDP series. The graphs show the deviation of the standardised series from their respective historical long-term trends. Because of the standardisation procedure, the deviation measure has no particular unit (i.e. it is not measured in dollars, or percentage change, or any other real world unit).

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This page last updated 8 December 2006

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